



AMENDMENTS

Please amend the application as indicated hereafter.

RECEIVED

DEC 13 2002

Technology Center 2600

In the Claims

Please cancel claims 17, 18, 23, 24, and 26 without prejudice, waiver, or disclaimer.

Also, please substitute the following clean copy claims for pending claims 1, 4-6, 10, 11, 14, 16, 19-22, and 25:

Sub 1. (Three Times Amended) A circuit for detecting clocking errors in the synchronization of a DTE (data terminal equipment) data signal with a DCE (data communication equipment) clocking signal in a communication environment wherein the DCE interfaces the DTE to a communication channel at an interface rate determined by the DCE clocking signal, the circuit comprising:

a clock generating circuit configured to generate a master clock signal, a DCE clocking signal, and an internal clocking signal, each of the DCE clocking signal and internal clocking signal having a first frequency that is a fraction of the frequency of the master clock signal;

a sample enable generator configured to receive the master clock signal and the internal clocking signal and to generate a first sample enable signal at a first time and a second sample enable signal at a second time, the second time being subsequent to the first time; and

a sample comparator having inputs that receive said first sample enable signal, said second enable signal and said DTE data signal, the sample comparator configured to sample the DTE data signal at the first time and sample the DTE data signal at the second time, the sample comparator further configured to compare the DTE data signal sample at the first time with the DTE data signal sampled at the second time and determine, from the comparison, whether the DTE data signal has undergone a transition during the time interval between said first time and said second time.

4. (Once Amended) The circuit of claim 1, wherein said sample comparator generates a selector control signal when the sample comparator determines that the DTE data signal has undergone a transition.

5. (Once Amended) The circuit of claim 4, wherein the clock generating circuit comprises:

a clock generator that generates the DCE clocking signal;

an inverter that produces an inverted DCE clocking signal from the DCE clocking signal; and

a selector that receives the DCE clocking signal and the inverted DCE clocking signal and produces the internal clocking signal that is selected, in response to the selector control signal, from the group consisting of the DCE clocking signal and the inverted DCE clocking signal.

6. (Three Times Amended). A circuit for detecting and correcting clocking errors in the synchronization of a DTE (data terminal equipment) data signal with a DCE (data communication equipment) clocking signal in a communication environment wherein the DCE interfaces the DTE to a communication channel, the circuit comprising:

means for producing a master clock signal;

means for deriving a DCE clocking signal and an internal clocking signal from said master clock signal, said internal clocking signal having the same frequency as the DCE clocking signal;

means for obtaining a first sample of said DTE data signal at a first time and obtaining a second sample of said DTE data signal at a second time, said second time being subsequent to said first time, the interval between said first time and said second time being less than the period of the DCE clocking signal;

means for comparing said first sample to said second sample;

means for generating a selector control signal if said first sample is different from said second sample;

means for inverting said internal clocking signal to produce an inverted clocking signal; and

means for selecting, in response to said selector control signal, an output signal from the group consisting of said internal clocking signal and said inverted clocking signal.

10. (Three Times Amended) The circuit of claim 6, further comprising:

means for latching said DTE data signal, the means for latching being clocked by said internal clocking signal.

11. (Three Times Amended). A method for detecting clocking errors in the synchronization of a DTE (data terminal equipment) data signal with a DCE (data communication equipment) clocking signal in a communication environment wherein the DCE interfaces the DTE to a communication channel, the method comprising the steps of:

providing a master clock signal;

deriving a DCE clocking signal and an internal clocking signal from said master clock signal, said internal clocking signal having the same frequency as the DCE clocking signal;

obtaining a first sample of said DTE data signal at a first time and a second sample of said DTE data signal at a second time, said second time being subsequent to said first time, the time interval between said first time and said second time being less than the period of the DCE clocking signal;

comparing said first sample to said second sample; and

determining whether the DTE data signal has undergone a transition during the time interval between the first time and the second time.

14. (Twice Amended) The method of claim 13, further comprising the steps of:

inverting said DCE clocking signal to produce an inverted clocking signal; and

producing said internal clocking signal that is selected, in response to said selector control signal, from the group consisting of said DCE clocking signal and said inverted clocking signal.

16. (Once Amended) The circuit of claim 5, further comprising:
a data latch, clocked by said internal clocking signal, for latching said DTE data signal.

19. (Once Amended) The circuit of claim 16, wherein said first enable signal is generated on the rising edge of said output signal and said second enable signal is generated an integral number of master clock signals after said first enable signal.

20. (Once Amended) The circuit of claim 16, wherein said first enable signal is generated one master clock period before the rising edge of said internal clocking signal and said second enable signal is generated one master clock period after the rising edge of said internal clocking signal.

21. (Once Amended) The circuit of claim 28, wherein said first enable signal is generated on the rising edge of said internal clocking signal and said second enable signal is generated an integral number of master clock signals after said first enable signal.

22. (Once Amended) The circuit of claim 28, wherein said first enable signal is generated one master clock period before the rising edge of said internal clocking signal and said second enable signal is generated one master clock period after the rising edge of said internal clocking signal.

25. (Once Amended) The method of claim 15, further comprising the step of: performing said obtaining step and said latching step according to a time sequence referenced to said internal clocking signal.

↓
Please add the following new claims:

27. (Newly Added) The circuit of claim 4, wherein the clock generating circuit comprises:

a clock generator that generates said internal clocking signal;

an inverter that produces an inverted clocking signal from the internal clocking signal; and

a selector that receives the internal clocking signal and the inverted clocking signal and produces the DCE clocking signal that is selected, in response to the selector control signal, from the group consisting of the internal clocking signal and the inverted clocking signal.

28. (Newly Added) The circuit of claim 27, further comprising:

a data latch, clocked by said internal clocking signal, for latching said DTE data signal.

29. (Newly Added) The method of claim 13, further comprising the steps of:

inverting said internal clocking signal to produce an inverted clocking signal; and

producing said DCE clocking signal that is selected, in response to said selector control signal, from the group consisting of said internal clocking signal and said inverted clocking signal.